

Direct Photon Search in p and π^+ -induced Reactions at $\sqrt{s} = 17.3$ GeV

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Abstract

Thermal photon radiation is considered to be a unique probe of Quark Gluon Plasma formation and can be used as a thermometer for temperatures reached in ultra-relativistic heavy-ion collisions. At the CERN SPS, the WA98 collaboration has measured a direct photon excess in $^{208}\text{Pb} + ^{208}\text{Pb}$ collisions at 158 AGeV.

In this work we discuss the π^0 and γ production cross sections in $p/\pi^+ + ^{208}\text{Pb}$ and $p/4\pi^+ + ^{12}\text{C}$ collisions at 160 GeV measured by the WA98 experiment in the transverse momentum range $0.5 < p_T < 3.5$ GeV/c. The question of the existence of thermal photon radiation in Pb + Pb collisions is addressed by comparison of the Pb + Pb direct photon yield to the scaled yield observed in pA collisions.

The present data provide the lowest \sqrt{s} measurement of photons in p/π^+ -induced reactions which could be of direct origin.
